

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Report of Investigation

Title of Investigation:
KING, Robert Leon

Investigation Number:
768045-23-0060

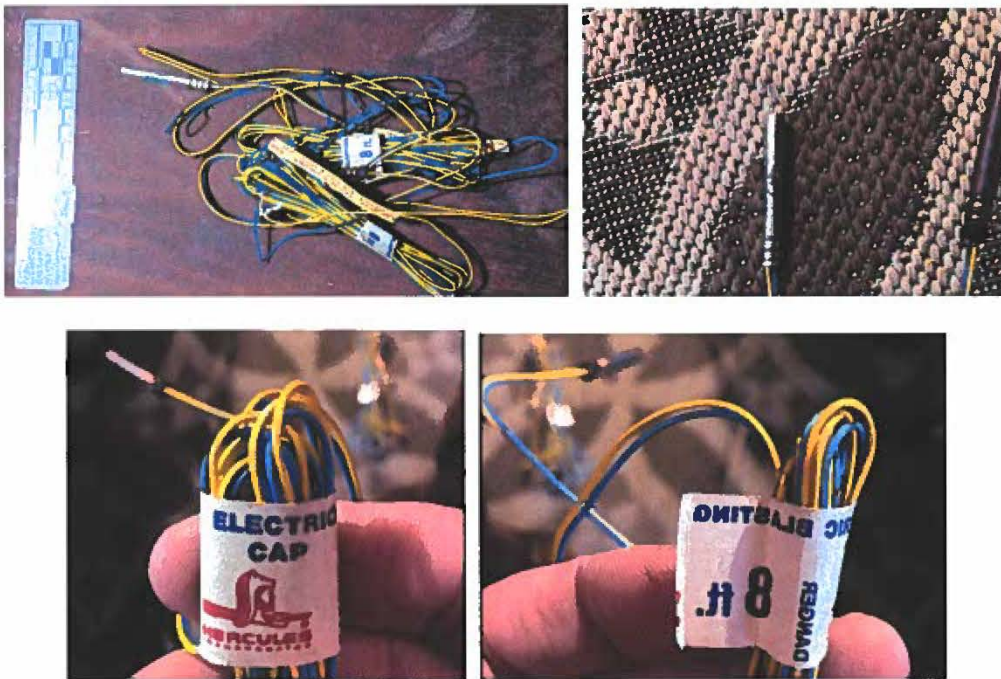
Report Number:
6

SUMMARY OF EVENT:

July 06, 2023, examination, and trace results of electric detonators/blasting caps listed as ATF Item #: 011

NARRATIVE:

- On July 06, 2023, SABA Duke examined photographs of the four electric blasting caps/detonators located on 04/18/2023 during the search warrant executed at 1006 Cascade Drive, Pembroke VA. These items are listed as ATF Item #: 011. SABA Duke received four photographs from SA Davis on 7/6/23 and nine photographs from VSP Lt. Lewis on 5/5/23. Based on examination of the photographs, there are two aluminum shell and two bronze shell commercial electric blasting caps. Both have blue and yellow leg wires. Tags located on the bronze shell electric blasting caps show 8' leg wires and list Hercules Incorporated as the manufacturer.



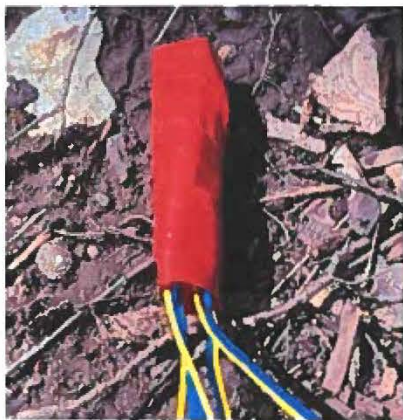
Prepared by: William C. Duke	Title: Special Agent, Bristol Field Office	Signature: 	Date: 7/13/23
Authorized by: Keith J. Teehan	Title: Resident Agent in Charge, Roanoke Field Office	Signature: 	Date: 7/14/23
Second level reviewer (optional): Craig B. Kailimai	Title: Special Agent in Charge, Washington Field Division	Signature:	Date:

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2. SABB Duke reached out to the USBDC for research assistance with identifying the location of manufacture for these blasting caps. SABB Duke received reference material provided to ATF, which states that all electric detonators made by the Hercules company were manufactured in their Port Ewen, NY plant. In 1985 Dyno Nobel acquired the Hercules company and their Port Ewen, NY Plant. This shows the recovered detonators were manufactured no later than 1985. Due to limited information and no date shift code, an exact date of manufacture is not able to be determined. (See attached documents).
3. The recovered Hercules commercial electric blasting caps/detonators were manufactured by Hercules Incorporated at their manufacturing facility located in Port Ewen, NY. This shows that these electric blasting caps traveled in and affected interstate commerce.
4. SABB Duke spoke with VSP Lt. Lewis as to his disposal of the blasting caps by energizing them and functioning them as designed. The photographs provided show the post blast status of the blasting caps. The photographs show they exploded and functioned as designed.



5. Based on my examination, research, training, and experience, the blasting cap/detonators recovered by Lt. Lewis, during the execution of a search warrant on 04/18/2023, at the residence located at 1006 Cascade Drive, Pembroke VA, were functional commercial blasting caps manufactured by Hercules Incorporated. The blasting caps are explosives as that term is defined in 18 USC 841(d) and would be subject to federal regulation and have traveled in and affected interstate commerce.

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ATTACHMENTS:

Hercules letter to ATF stating all electric caps made at plant located in Port Ewen NY.

Detonator info from file regarding Hercules caps.

Dyno Nobel history showing acquisition of Hercules in 1985.

USAO_000005



HERCULES INCORPORATED

EXPLOSIVES & CHEMICAL PROPULSION DEPARTMENT • WILMINGTON, DELAWARE 19899

February 11, 1971

Mr. Rex Davis
Acting Director
Alcohol, Tobacco and Firearms Div.
Internal Revenue Service
U. S. Treasury Department
Washington, D. C. 20224

Dear Sir:

The purpose of this letter is to inform you of the date-plant-shift code as adopted by Hercules Incorporated for traceability purposes.

Hercules will use four codes as follows and the examples will illustrate the date of February 12, 1971:

1. Detonators manufactured at our Port Ewen, New York plant, except fuse type blasting caps.
2. Fuse type blasting caps as manufactured for Hercules by Atlas Chemical Industries.
3. Cast boosters - called Titan Boosters - as manufactured for Hercules by Trojan-U.S. Powder Co.
4. All other explosives and blasting agents manufactured in our plants as listed below:

1. Detonators

2	1	0	2	1	2	0	8
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Digits 1 and 2 represent the current year less 50.
1971 - 50 = 21
Digits 3 and 4 represent the month - February
Digits 5 and 6 represent the day - 12th
Digits 7 and 8 refer to a packers number in our plant.

There will not be a plant designation as all our detonators - except fuse type blasting caps - are manufactured at our Port Ewen, New York plant.



Mr. Rex Davis

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February 11, 1971

2. Fuse Type Blasting Caps

0	2	1	2	7	1	1	2	3	4	5
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Digits 1 and 2 represent the month
 Digits 3 and 4 represent the day
 Digits 5 and 6 represent the year
 Digits 7 through 11 refer to Atlas inplant operating procedure. Atlas has only one detonator plant which is at Reynolds, Pennsylvania, so no digit is reserved for the plant.

This code will have dashes between every two digits as it appears on the outside case. On the inside cartons the code will be continuous.

3. Cast Boosters

1	2	F	E	B	7	1	S	1	D
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Digits 1 and 2 represent the day of the month
 Letters 3, 4, and 5 spell the abbreviation of the month
 Digits 6 and 7 represent the year
 Letter 8 refers to the plant with the designation as shown below.
 Digit 9 is what Trojan-U.S. Powder calls a "Pot" number or batch number.
 Letter 10 refers to the shift with "D" as Day, "M" as middle shift, and "N" as night shift.

<u>Plant Designation (Letter 8)</u>	<u>Plant Location</u>
S	Seiple, Pa.
M	Marion, Ill.
U	Springville, Utah
W	Wolflake, Ill.



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4. Explosives manufactured by Hercules -
other than electric detonators

F E B 1 2 7 1 K 1
(1) (2) (3) (4) (5) (6) (7) (8) (9)

Letters 1, 2, and 3 refer to the abbreviation of the month.

Digits 4 and 5 represent the day

Digits 6 and 7 represent the year

Letter 8 refers to the plant with the designations as listed below.

Digit 9 represents the shift, with 1, 2, and 3 referring to the first, second, or third shift of that particular day.

Plant
Letter
Designation

Plant Location

B	Bessemer, Ala.
C	Carthage, Mo.
K	Kenvil, N. J.
P	Pluto - Ishpeming, Mich.
G	Gilbert, Minn.
F	Freeburg, Ill.
L	Lincoln, Calif.

In the past Hercules used the "ARTICHOKE" code which is listed below. The three letters refer to the month and year of manufacture. For dynamite such a code would be as follows: 12-110-HAK-K which represents Batch 10 made at Kenvil on the 12th of February, 1970. The batch number is 10 not 110. Kenvil uses the first digit 1, another plant would use the first batch digit as 2, such as 210 and another plant as 310, etc.

For detonators made at Port Ewen, New York, an example would be BC 12 HAK. This indicated that the carton of caps was packed by workman B at Port Ewen on the 12th of February 1970.



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February 11, 1971

These codes appeared on the case of explosive only and for detonators it appeared on the cartons and the cases. No caps or individual cartridges were coded. This code has been discontinued voluntarily on January 1, 1971 and definitely by February 12, 1971 in favor of the date-plant-shift code. We include this code for identification of products that were manufactured prior to February 12, 1971.

	<u>1971</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>
Jan.	HSE	HSK	HSO	HSB	HSC	HSI	HST	HSR	HSA
Feb.	HAE	HAK	HAO	HAH	HAC	HAI	HAT	HAR	HAA
Mar.	HRE	HRK	HRO	HRH	HRC	HRI	HRT	HRR	HRA
Apr.	HTE	HTK	HTO	HTH	HTC	HTI	HTT	HTR	HTA
May	HIE	HIK	HIO	HIH	HIC	HIJ	HIT	HIR	HIA
June	HCE	HCK	HCO	HCH	HCC	HCI	HCT	HCR	HCA
July	HLE	HLK	HLO	HLH	HLC	HLI	HLT	HLR	HLA
Aug.	HOE	HOK	HOO	HOH	HOC	HOI	HOT	HOR	HOA
Sept.	HKE	HKK	HKO	HKH	HKC	HKI	HKT	HKR	HKA
Oct.	HEE	HEK	HEO	HEH	HEC	HEI	HET	HER	HEA
Nov.	OSE	OSK	OSO	OSH	OSC	OSI	OST	OSR	OSA
Dec.	OAE	OAK	OAO	OAH	OAC	OAI	OAT	OAR	OAA

Any questions should be addressed to the writer.

Very truly yours,

Deane Boddorff
Manager, Technical Services
Explosives Division

DB:ea

CC: Mr. Robert Pierce
Alcohol, Tobacco and Firearms Div.
Internal Revenue Service
P. O. Box 784
Benjamin Franklin Station
Washington, D. C. 20044



USAO_000010



**We offer you
eight different types
of blasting caps...
Nobody else does!**



TOTAL CAPABILITY

Hercules has pioneered in the production of blasting caps since 1920. Our plant at Port Ewen, New York, makes and assembles every element of the cap. This includes forming of the metal shell structure, drawing of the metal rods into wire, insulating and color-coding of legwire, precision-welding the bridgewire, and loading the complete explosive train, from heat-sensitive primary ignition material to tonating high explosive.





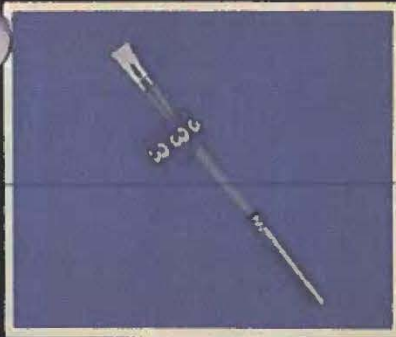
QUALITY ASSURANCE

We produce over a million electric blasting caps every month, and during the production sequence each one of these caps is subjected to four different nondestructive tests to ensure bridgewire reliability. Each cap also undergoes a pull test to confirm weld integrity of the lead wires. To assure caps of the highest reliability, routine surveillance includes destructive testing for output energy, delay timing, static sensitivity, voltage breakdown, current leakage, hydrostatic pressure, and pulse current tests for minimum energy firing. We shoot approximately 150,000 caps per year in destructive testing programs. That's a lot of potential sales dollars, but we absorb the cost because we want to assure you our caps will do what they should.

EXAMINE THESE FEATURES

- Excellent water resistance. All Hercules electric blasting caps must withstand a water head of 250 psi.
- Hercoshunt™ electrical shunting completely shields the legwire ends from possible stray currents and provides corrosion protection to the wires so that they are clean and bright when firing connections are ready to be made.
- Polyolefin-insulated legwires offer superior dielectric strength, excellent resistance to abrasion and cuts, good flexibility at below-zero temperatures, and high tensile strength.
- Brilliant, high-gloss legwire colors furnish excellent contrast for quick distinguishability.
- We are the leader in adoption of high-energy base charges.

HERCUDET™



Hercudet cap with 4-inch leads is designed primarily for surface blasting applications. When it is used as an in-hole initiator, cap leads are extended out of the borehole with tough plastic duplex trunkline. This same cap is also used for surface initiation of detonating cord. The standard 4-inch lead length reduces inventory requirements. Hercudet is also available in 16- or 24-foot lengths for underground use.

HERCUDET NONELECTRIC DELAY BLASTING CAP SYSTEM

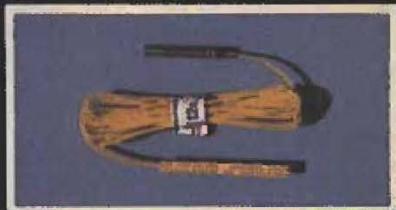
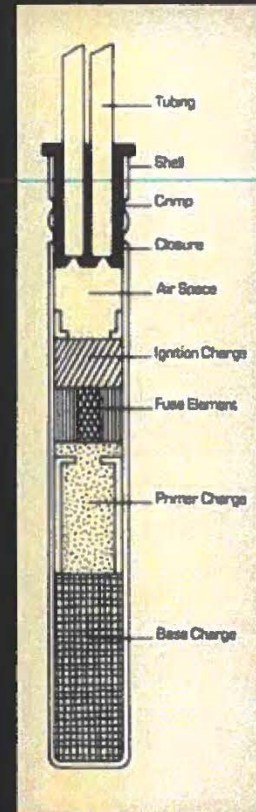
Because of its outstanding safety features, lack of noise, and other significant advantages over all other known methods of initiating explosives, the Hercudet nonelectric delay blasting cap system is considered by Hercules to be a major breakthrough for explosives users who have long desired an improved blasting method. The method is based upon a detonable gas mixture that is introduced into a

hookup of plastic tubing. Except for the cap itself, the hookup from hole to hole is considered "inert until charged" prior to introduction of the gas mixture.⁽¹⁾

Features include:

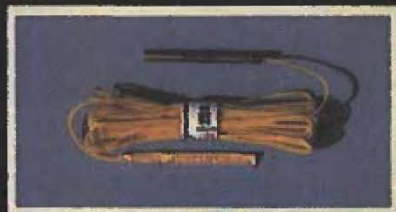
- No trunkline noise; no airblast complaints
- Cannot be initiated by radio frequency energy, stray current, or static electricity
- The only nonelectric initiation system with circuit test capability

⁽¹⁾ The gaseous mixture presents no health risk, either during charging or as an afterblast residue.



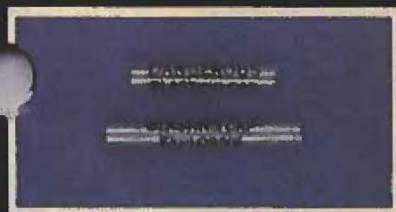
VIBRODET®

No. 8 strength, static-resistant, waterproof, no-time-lag seismograph electric detonator designed to ensure initiation under the environmental extremes associated with seismic prospecting. Vibrodet is furnished in aluminum shell with legwire lengths from 30 to 440 feet, and with bronze shells in legwire lengths under 30 feet. See Bulletin TD-225A.



IMPULSARDET™

An extra-strength seismic detonator designed specifically for initiating the Impulsar™ land seismic blasting agent starter charge. This electric detonator is stronger than any other seismic detonator available. See Bulletin TD-236B.



BLASTING CAPS (FUSE CAP)

Blasting caps (fuse cap) are used in conjunction with safety fuse to provide a nonelectric method for initiating explosives. They are available in No. 6 and No. 8 strengths. See Bulletin TD-236B.

*For continuing education on practices related to electrical blasting, ask for our literature on **Cap Facts**.*

<u>Bulletin</u>	<u>Title</u>
ECF-101	How an Electric Delay Cap Functions
ECF-102	Recommended Firing Currents
ECF-103	Basic Guidelines for Insuring Proper Firing Current
ECF-104	Understanding the Blasting Galvanometer
ECF-105	Using the Blasting Galvanometer
ECF-106	Blasting Caps and Youngsters
ECF-107	Summer Quiz (Facts About Lightning and Caps)
ECF-108A	Eliminating the Ingredients of Failure
ECF-109	Planning the Firing Circuit
ECF-110B	Planning the Series Firing Circuit
ECF-111	Planning the Parallel Firing Circuit



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Our History



Dyno Nobel traces its roots back to William Bickford's invention of Safety Fuse in 1831 and Alfred Nobel in 1865.

Over 170 years later, Dyno Nobel has become the world's leading explosives company and a truly global supplier of commercial explosives solutions. We currently operate in 35 countries and are rapidly increasing our presence in Asia, Africa, Eastern Europe and Latin America.

Alfred Nobel and the foundation of Dyno Nobel

During the 1860's, Alfred Nobel experimented with the packaging of nitroglycerin as a safe explosive. Within a few years, he had developed and patented dynamite, and established his first company, Nitroglycerin Compagniet. It was this company, founded on a strong philosophy of safety and innovation, that later became Dyno Nobel.

Dyno Nobel, The Ensign-Bickford Company and the invention of safety fuse

It began over two hundred years ago, when the first safety fuse was invented by William Bickford, saving the lives of countless coal miners working the hills of northern England. Prior to Mr. Bickford's invention, blasting was done with gunpowder, ignited by fuse made of wheat straws or goose quills nested together and filled with powder. One day, while visiting a rope maker, the idea came to him that if a funnel filled with powder could be arranged to pour a stream into the center of the twisted strands, and if the rope could be securely fastened and waterproofed, he would have a slow-burning fuse. Bickford-Smith & Company, in Cornwall, England, would soon become Toy, Bickford & Company with the addition of Joseph Toy, who would bring the operation to America in 1836. When Joseph Toy handed the reins to his son-in-law Ralph Ensign, this safety fuse manufacturing facility in Simsbury, Connecticut would officially become The Ensign-Bickford Company. In 2003 The Ensign-Bickford Company merged with Dyno Nobel ASA, with the new entity to be called Dyno Nobel.

Industri Kapital acquires Dyno Industrier ASA forming Dyno Nobel ASA

Dyno Nobel is owned by leading European equity firm, Industri Kapital, renowned for its strong business analysis skills and financial base.

In December 1999 Industri Kapital acquired Dyno ASA (formerly Dyno Industrier ASA) delisting it from the Norwegian Stock Exchange. The acquisition was completed in August 2000 and the newly privatized company renamed Dyno Nobel ASA.

At the time of the acquisition Kim Wahl, Deputy Chief Executive of Industri Kapital said, "Our ambition is to expand the explosives operations both organically and through acquisitions with the objective of securing Dyno's position as the world's leading commercial explosives manufacturer."

Dyno Nobel, IRECO Chemicals and the invention of slurry explosives

Dyno Industrier ASA acquired IRECO Chemicals in 1984, the company created by Dr. Melvin Cook - significantly expanding Dyno Nobel's operations in North America.

Dr. Melvin Cook's greatest commercial explosives invention was formulated in December 1956, while consulting for Iron Ore Company of Canada at the Knob Lake Mine in Labrador, where he created a new blasting agent using an unusual mixture of ammonium nitrate, aluminum powder, and water. Tests that followed resulted in the development of a new field of explosives: slurry explosives, boosters, and pump trucks for their bulk delivery.

As result of the Knob Lake Experiment, the Iron Ore Company of Cada supported research on slurry explosives beginning in 1957. Mesabi Blasting Agents was founded in 1960 for operation on the Mesabi Iron Range. In 1963 these two companies merged and became IRECO Chemicals, a worldwide operation.

Gulf Resources and Chemical Corporation of Houston, Texas acquired IRECO Chemicals in 1975. IRECO had become a leading commercial explosive company throughout the world by 1974 and in 1984 was acquired by Dyno Industrier ASA, and later became Dyno Nobel.

A timeline of Dyno Nobel's major milestones can be seen below:

- 2003 Dyno Nobel & Ensign-Bickford Company merger completed. Dyno Nobel acquires St. Lawrence Explosives Inc. Dyno Nobel Peru and Samex merge to form Dyno Nobel-Samex.
- 2000 Dyno Nobel, Dyno Industries' Explosives Group, acquired by Industri Kapital. Dyno Nobel becomes a fully focused explosives organization. Dyno Nobel Latin America formed. Queensland Nitrates commenced.

operation to provide Eastern Australia with ammonium nitrate.

- 1999 DynoConsult, the specialist consulting division of Dyno Nobel, is formed.
- 1997 Dyno Nobel forms a joint venture with Tec Harseim in South America creating Dyno Nobel Chile
- 1996 Dyno Nobel Asia Pacific established. Dyno acquires the remaining 50% share in Dyno Wesfarmers Ltd
- 1988 Dyno Wesfarmers Ltd. Is formed in Australia.

- 1986 Dyno acquires Nitro Nobel with operations in Sweden, Philippines, India, Australia and Malaysia.
- 1985 Dyno acquires Hercules' commercial explosives operations.
- 1984 Dyno Nobel Americas formed after acquiring IRECO and its operations in USA, Canada, Brazil and Chile.
- 1973 Nonelectric initiation system NONEL® introduced by Nitro Nobel (Dyno Nobel).
- 1956 Slurry explosives pioneered by IRECO (Dyno Nobel).
- 1917 Production of nitrocellulose starts as Nitroglycerin Compagniet (Alfred Nobel's first company and the forerunner of Nitro Nobel, now part of Dyno Nobel).
- 1876 Alfred Nobel invents Dynamite
- 1865 Alfred Nobel invents the first detonator. The forerunner of Dyno Nobel founded in Norway by Nobel associate and a group of Norwegian businesspeople.
- 1836 The Ensign-Bickford Company (now part of Dyno Nobel) begins operation in America
- 1831 William Bickford invents Safety Fuse.

Product Innovation History

Every major explosives innovation has been developed by Dyno Nobel, starting with the invention of Safety Fuse in 1831, to the development of Slurry Explosives in 1956 and the creation of DynoConsult in 1999.

Year	Innovation
1831	Safety fuse is invented by William Bickford, the founder of The Ensign-Bickford Company, to replace black powder-filled cord (mining safety increases dramatically).
1865	Alfred Nobel, the founder of companies that laid the foundation of Dyno Nobel, invents the first blasting cap .
1867	Alfred Nobel invents dynamite , another major step in explosives safety and efficiency.
1936	A reliable, flexible, easy-to-use textile-jacked detonating cord -- Primacord® developed by The Ensign-Bickford Company.
1956	Slurry explosives pioneered by Dr. Melvin Cook (IRECO, later Dyno Nobel)
1960's	Dyno Nobel Develops revolutionary inert-until-mixed site-mixed (SMS™) pump truck systems for slurry explosives as well as small diameter packaged products.
1973	Nonelectric initiation system NONEL® invented by Per Anders Persson (Nitro Nobel, later Dyno Nobel).
1980's	Dyno Nobel commercializes packaged and bulkemulsions , another type of water-based explosive.
1980's – 1990's	Continuing development of nonelectric initiation systems by both The Ensign-Bickford Company and Dyno Nobel. Continuing development of sophisticated bulk explosives delivery systems by Dyno Nobel.
1999	DynoConsult, a specialist consulting division of Dyno Nobel, is formed.
2003	Dyno Nobel continues to lead the explosives industry by combining Dyno Nobel and The Ensign-Bickford Company.